

AD-A167 439

LOCAL AUTOMATION MODEL: IMPLEMENTATION PLANNING FOR THE 1/1
PROTOTYPE SYSTEM(U) LOGISTICS MANAGEMENT INST BETHESDA

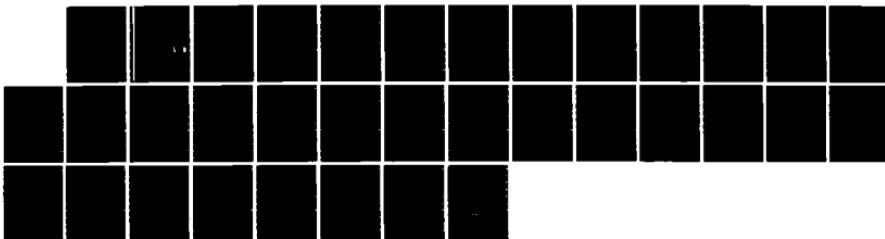
MD R W HART ET AL. OCT 85 LMI-DL501 DTIC-TR-86/11

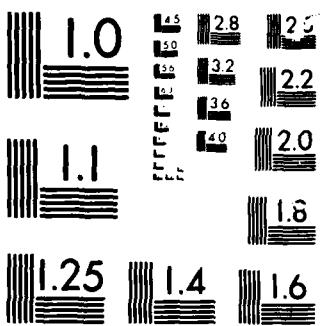
UNCLASSIFIED

MDA903-85-C-0139

F/G 9/2

NL





MICROCOM

CHART

AD-A167 439

LOCAL AUTOMATION MODEL:
IMPLEMENTATION PLANNING
FOR THE PROTOTYPE SYSTEM

October 1985

Richard W. Hartt
Dennis J. O'Connor

DTIC
SELECTED
MAY 27 1986
S A

Prepared pursuant to Department of Defense Contract MDA903-85-C-0139 (Task DL501). The views, opinions, and findings contained in this report are those of the authors and should not be construed as an official Department of Defense position, policy, or decision, unless so designated by other official documentation. Except for use for Government purposes, permission to quote from or reproduce portions of this document must be obtained from the Logistics Management Institute.

DTIC FILE COPY

LOGISTICS MANAGEMENT INSTITUTE
6400 Goldsboro Road
Bethesda, Maryland 20817-5886

This document has been approved
for public release and sale; its
distribution is unlimited.

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified/Unlimited		1b. RESTRICTIVE MARKINGS										
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT										
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE												
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S) DTIC/TR-86/11										
6a. NAME OF PERFORMING ORGANIZATION Logistics Management Institute	6b. OFFICE SYMBOL (if applicable)	7a. NAME OF MONITORING ORGANIZATION Defense Technical Information Center										
6c. ADDRESS (City, State, and ZIP Code) 6400 Goldsboro Road Bethesda, Maryland 20817-5886		7b. ADDRESS (City, State, and ZIP Code) Cameron Station Alexandria, Virginia 22304-6145										
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Defense Technical Information Center	8b. OFFICE SYMBOL (if applicable) DTIC	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER MDA 903-85-C-0139										
8c. ADDRESS (City, State, and ZIP Code) Cameron Station Alexandria, Virginia 22304-6145		10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. PROJECT NO. TASK NO. WORK UNIT ACCESSION NO. DL-501										
11. TITLE (Include Security Classification) Local Automation Model: Implementation Planning for the Prototype System												
12. PERSONAL AUTHOR(S) Hartt, Richard W., O'Connor, Dennis J.												
13a. TYPE OF REPORT	13b. TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Year, Month, Day) October 1985	15. PAGE COUNT 34									
16. SUPPLEMENTARY NOTATION												
17. COSATI CODES <table border="1"><tr><th>FIELD</th><th>GROUP</th><th>SUB-GROUP</th></tr><tr><td>5</td><td>2</td><td></td></tr><tr><td>9</td><td>2</td><td></td></tr></table>	FIELD	GROUP	SUB-GROUP	5	2		9	2		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) LAM (Local Automation Model), SBIN (Shared Bibliographic Input System), Implementation, Libraries, Bibliographic Information, Automation, Security Accreditation		
FIELD	GROUP	SUB-GROUP										
5	2											
9	2											
19. ABSTRACT (Continue on reverse if necessary and identify by block number) This implementation plan (IP) addresses site preparation, installation, accreditation, operation and maintenance for the prototype minicomputer version of the Local Automation Model (LAM), a dedicated classified minicomputer, as well as required support and applications software. The implementation plan serves two purposes. First and foremost, it is the overall IP for the prototype site, Defense Nuclear Agency Headquarters. It can also be used as a model for others preparing automation system implementation plans, especially for LAM, an integrated library system combined with an intelligent gateway processor. The IP contains the following information: the tasks required for implementation, the organizational elements involved in planning and implementation, a summary of system requirements and general guidelines for system implementation.												
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION Unclassified/Unlimited										
22a. NAME OF RESPONSIBLE INDIVIDUAL Barbara Everidge		22b. TELEPHONE (Include Area Code) (202)-274-5367	22c. OFFICE SYMBOL DTIC-ER									

**LOCAL AUTOMATION MODEL:
IMPLEMENTATION PLANNING
FOR THE PROTOTYPE SYSTEM**

October 1985

**Richard W. Hartt
Dennis J. O'Connor**

Prepared pursuant to Department of Defense Contract MDA903-85-C-0139 (Task DL501). The views, opinions, and findings contained in this report are those of the authors and should not be construed as an official Department of Defense position, policy, or decision, unless so designated by other official documentation. Except for use for Government purposes, permission to quote from or reproduce portions of this document must be obtained from the Logistics Management Institute.

**LOGISTICS MANAGEMENT INSTITUTE
6400 Goldsboro Road
Bethesda, Maryland 20817-5886**

**This document has been approved
for public release and sale; its
distribution is unlimited.**

TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
1. GENERAL		1- 1
1.1 Purpose		1- 1
1.2 Project References and Description		1- 2
1.3 Terms and Abbreviations		1- 3
2. IMPLEMENTATION PLANNING OVERVIEW		2- 1
2.1 Description		2- 1
2.2 Participating Staff Elements		2- 1
2.3 Summary of Requirements		2- 2
2.3.1 Support Materials		2- 5
2.3.2 Training		2- 5
2.3.3 Personnel Requirements		2- 5
2.3.4 Personnel Orientation		2- 5
3. IMPLEMENTATION SUMMARY		3- 1
3.1 Tasks		3- 1
3.2 Schedule		3- 5

APPENDIX

- A. COMPUTER SITE SELECTION
- B. UTILITIES AND ENVIRONMENTAL CONTROL
- C. STRUCTURAL ALTERATIONS AND MODIFICATIONS
- D. ACCESS CONTROLS AND PHYSICAL SECURITY
- E. LOCAL NETWORK INSTALLATION
- F. DROLS LINE RELOCATION
- G. HARDWARE INSTALLATION AND TESTING

Accession For	
NTIS GRA&I	
DTIC TAB	
Unannounced	
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special



TABLE OF CONTENTS (CONTINUED)

APPENEDIX (CONTINUED)

- H. SOFTWARE INSTALLATION AND TESTING
- I. RISK ANALYSIS AND SYSTEM ACCREDITATION
- J. FILE CONVERSION
- K. TRAINING
- L. SOFTWARE ANALYSIS

SECTION 1. GENERAL

1.1 Purpose.

The Local Automation Model (LAM) prototype system is scheduled for installation at the Defense Nuclear Agency (DNA) in November 1985. This implementation plan (IP) for the prototype system serves two purposes. First and foremost, it is the overall IP for DNA. It also can be used as a model for others preparing automated system implementation plans, especially those for the LAM. The IP contains the following information:

- The tasks required for implementation
- The organizational elements involved in planning and implementation
- A summary of system requirements
- General guidelines for system implementation.

The IP document will remain in effect throughout system implementation. The document will be modified as required to reflect changes in planning and execution. Tasks are summarized in Section 3 of the IP. The IP provides planning assumptions and a summary of system requirements, organizes the tasks to be accomplished for implementing the system (as developed by participating DNA staff), and integrates the efforts and actions of those responsible for system implementation. Participants in the implementation planning process are encouraged to comment on the contents of this document and should contact the Director for Technical Information concerning questions or comments on the IP.

1.2 Project References and Background.

The LAM project encompasses system design, development, and evaluation of a fully integrated library system for technical libraries and is sponsored by the Defense Technical Information Center (DTIC) located at Cameron Station in Alexandria, Virginia. The following documents are available describing the life cycle development of the system to date:

- Local Automation Model: Conceptual Design Document, Logistics Management Institute, April 1983

- Local Automation Model: Functional Description, Logistics Management Institute, October 1983
- Local Automation Model: System Specification, Logistics Management Institute, February 1984
- Local Automation Model: Assessment of Library Software Availability, Logistics Management Institute, September 1984
- Local Automation Model: Software Benchmarking Test Plan, Logistics Management Institute, March 1985.

The objective of the LAM project is to provide a system that will be available for implementation by Department of Defense (DoD) technical libraries. The prototype system - implemented at DNA - will provide the opportunity to demonstrate and evaluate an automated library system with special features for bibliographic information sharing. The system will support conventional collection handling capabilities such as original cataloging and citation retrieval. In addition, the system will facilitate information sharing between DoD technical libraries and DTIC by incorporating "gateway" processing capabilities.

Gateway capabilities required for the system include (1) automatic searching of both the local technical library catalog and the DTIC Technical Reports (TR) data base using a single search language and format, (2) downloading information from the TR data base to the local system, and (3) machine-aided translation of locally created catalog citations into a format acceptable for entry in the TR data base. Thus with one system and one set of commands, a technical library can (1) maintain and expand a catalog tailored to local needs, (2) access the information contained in the TR data base, and (3) contribute directly to the timely dissemination of scientific and technical information via direct cataloging in the TR data base.

Of particular interest for implementation planning is the requirement for processing classified bibliographic citations (up to SECRET) on the system. Classified citations will be stored on the computer at DNA and transferred between DTIC and DNA. In addition, access to the citations contained on the DNA computer must be available to the system users - library staff members in the DNA technical library who are cleared for system access.

Initiation of and requirements for the LAM project originated from the need to reduce the TR data base cataloging burden placed on Shared Bibliographic Input Network (SBIN) member libraries and thereby promote information sharing. SBIN was established as an experiment in shared cataloging and has become an ongoing DTIC program. In addition to providing inputs to a local catalog, SBIN member libraries catalog their documents into the TR data base using the Remote Terminal Input System (RTIS) available on the Defense Research, Development, Test, and Evaluation (RDT&E) On-Line System (DROLS).

Five commercial software packages were evaluated for use in the prototype system. As a result of benchmarking, one of the five commercial packages will be selected for prototype system implementation. Benchmarking and software integration (commercial package plus the gateway software) will continue through Fiscal Year 1986 (FY86).

The prototype and production systems will be implemented using commercially available library software. The gateway features available in the prototype system will be provided through adaptation of the Integrated Information System (IIS) developed by the Technology Information System (TIS) group located at Lawrence Livermore National Laboratory (LLNL). Selection of commercial software for the prototype system will be accomplished through performance benchmarking as documented in Local Automation Model: Software Benchmarking Test Plan.

Included in the LAM project is the development of an acquisition strategy and plan for a production system. Competitive bids will be solicited for acquisition of the production system. The performance specifications and statement of work for the solicitation will be developed and refined through experience gained with the prototype system operating at DNA. Operation of the prototype system at DNA represents a significant stage of the development life cycle and will lay the foundation for successful acquisition of the production system for the remainder of the DoD technical libraries and information analysis centers.

1.3 Terms and Abbreviations.

The following terms, acronyms, and abbreviations are used in this document:

- ASCII: American Standard Code for Information Interchange

- **ATLAS**: Automated Technical Library Accession System - the automated catalog of technical report bibliographic citations currently maintained by DNA
- **DNA**: Defense Nuclear Agency
- **DoD**: Department of Defense
- **DROLS**: Defense RDT&E On-Line System
- **DTIC**: Defense Technical Information Center
- **IIS**: Integrated Information System - an intelligent gateway developed and supported exclusively by the TIS group at LLNL
- **IP**: Implementation Plan - the planning and decision-making steps leading to implementation of an automated system
- **LAM**: Local Automation Model - a project sponsored by DTIC for demonstrating, evaluating, and acquiring an integrated library system encompassing local collection management and access to external bibliographic resources
- **LLNL**: Lawrence Livermore National Laboratory - a Department of Energy-funded, contractor-operated research and development laboratory located in Livermore, California
- **RDT&E**: Research, Development, Test, and Evaluation
- **RTIS**: The Remote Terminal Input System operated by DTIC and used to transfer TR data base inputs from on-line user files to the TR data base
- **SBIN**: Shared Bibliographic Input Network
- **TIS**: Technology Information System - used to describe both the work on advanced information-handling technology and the organizational element (group) performing this work at LLNL
- **TR Data Base**: The Technical Reports data base operated and maintained by DTIC containing over 1 million citations to reports published or sponsored by DoD.

SECTION 2. IMPLEMENTATION PLANNING OVERVIEW

2.1 Description.

The implementation plan addresses site preparation, installation, accreditation, operation, and maintenance of a dedicated classified minicomputer along with required support and applications software. Staff elements within DNA headquarters are assigned responsibilities for automated system implementation. Section 2.2, "Participating Staff Elements," lists the staff elements participating in prototype system implementation. Each is responsible for (1) detailed implementation planning and (2) subsequent management and execution of the portions of the plan falling within their area of responsibility.

The initial version of the IP document outlined the tasks and schedule needed for successful, economical, and timely system implementation. Responsibilities for planning and executing the tasks are assigned to staff elements, which in turn develop detailed plans for accomplishing the task. Subsequent revisions to the IP reflect these detailed plans. Each participating staff element must determine the implementation methods and details best suited to meet the overall requirements and schedule. These detailed plans and corresponding schedules for each task will be incorporated into this document as appendices. The tasks are summarized in Section 3, "Implementation Summary."

2.2 Participating Staff Elements.

Implementation of the prototype system requires participation from the following DNA headquarters staff elements as indicated:

- Comptroller - Data Automation Policy and Systems Division
 - Computer operations
 - Data processing technical support
 - Data conversion technical support
 - Risk analysis
 - System accreditation (lead organization)

- Logistics and Engineering Directorate
 - Facilities engineering:
 - Utilities and environmental conditioning and control
 - Structural alterations and modifications
 - Telecommunications planning and installation
 - Communications security
- Intelligence and Security Directorate
 - Physical security
 - TEMPEST testing and accreditation
 - Site protection
- Counter-intelligence Detachment
 - Security planning assistance
- Technical Library
 - Implementation planning management
 - Training
 - System operation
 - Data conversion (retrospective cataloging)
 - System accreditation.

2.3 Summary of Requirements

To aid in implementation planning, the following summary of system requirements is provided. This list represents only a summary of the requirements most likely to have a significant effect on system implementation. A complete description of requirements is contained in the system documents cited in Section 1.2, "Project References." A review of these documents is recommended, especially during the initial stages of implementation planning.

Prototype Life Cycle. The prototype system implemented at DNA will be used to demonstrate the concept of a technical library automated system integrating local collection management with access to external bibliographic resources. Experience gained with the prototype system will be used to develop performance and functional specifications for a competitive acquisition request-for-proposals for the production system. The prototype system will operate approximately 1 year. At the conclusions of the prototype life cycle, DNA may elect to implement the production system in place of the prototype.

Classified Citations. The system will store, retrieve, and display citations which can be classified up to SECRET. The citations will be stored on-line on magnetic disk, entered into computer main memory for processing, and displayed on video display terminals located in the technical library. At the user's request, the citations may be printed on printers located in the technical library and in the computer room. Classified citations will be maintained on the system during normal operating hours. Disk packs containing classified citations may only be removed when the system is not operational.

Access Control. Access to the system will be limited to members of the technical library staff and assigned computer operators. These users have access to the system via terminals located in the technical library and the computer center. The system controls access to data through use of user identifications, passwords, and access privileges. Passwords must be safeguarded by users and will be changed randomly to reduce the likelihood of unauthorized access. Access to system terminals will be limited to authorized users through a combination of physical barriers and visual inspection.

The technical library will designate a system administrator with responsibility for granting and controlling user access privileges. Access privileges govern the ability of users to read, write, and alter data or commands on the system. The system will maintain an audit trail of access attempts, transactions accessing classified data or system software, and user activity on the system.

Terminal Locations. Video display terminals used to access system functions and display data contained in the system will be located in the technical library and the office of the Director, Technical Information. These terminals will display data classified up to SECRET. In addition, the terminals located in the technical library will have attached printers capable of printing data transmitted to the terminal screen.

Existing Catalog. The technical library maintains an automated catalog of report citations. ATLAS contains technical report bibliographic citations which must be converted for use within the prototype system. In addition, other files used by the technical library for tracking contractor deliverables and technical report review and publication will be considered for conversion to the LAM system.

DROLS Access. DTIC provides access to the TR data base containing citations to over one million DoD technical reports. The prototype system permits users to simultaneously search the TR data base and the local catalog. At present, DNA operates a classified, 2400-baud dedicated line for accessing the TR data base via DROLS. Located in the technical library, this line must be relocated to the computer room housing the computer running the prototype system. The relocated line will not be activated until the system is accredited for classified processing. In the interim, an unclassified, asynchronous dial-up line will be added to the computer for software testing and debugging.

Access to DROLS terminals is restricted to cleared members of the DoD community. The security regulations and procedures of the organizations operating remote terminals govern installation and safeguarding of the terminal. DTIC has established guidelines for operating classified DROLS terminals. These are contained in Defense Logistics Agency Regulation 5230.3, "Security Measures Applicable to the Defense Research, Development, Test, and Evaluation (RDT&E) On-line System," 9 January 1980 (under revision). In addition, DTIC may inspect remote terminal sites for the purpose of ensuring compliance with operating guidelines.

Computer Operations Support. While staff members of the technical library will be responsible for operating the system in support of day-to-day library operations, additional staffing is required to handle computer operations.

Hardware Specifications. The specific brand and model of computer required to operate the system has not been established. However, characteristics of the system have been developed, as follows:

- 6 megabytes of main (real) memory
- 600 megabytes of on-line disk storage capacity
- Operator's console/terminal
- 1 high-speed line printer located with the computer
- Communications controller/multiplexer for local terminal and printer network
- 4800 baud local terminal and printer network capable of handling data classified up to SECRET

- 5 video display terminals each with low-speed printers located in the technical library (TEMPEST certified)
- 2 video display terminals and 1 low-speed printer located in the office of the Director, Technical Information (TEMPEST certified)
- Encryption device and modem for the DROLS classified line (currently installed in the technical library).

Selection of the prototype system computer will occur at the end of performance benchmarking.

For the purposes of implementation planning, use the characteristics and dimensions of the Digital Equipment Corporation VAX 11/750 processor with corresponding cabinet-mounted disk storage units.

2.3.1 Support Materials.

To be determined.

2.3.2 Training.

See "Training" listed in Section 3.1, "Tasks."

2.3.3 Personnel Requirements.

To be determined.

2.3.4 Personnel Orientation.

See "Training" in Section 3.1, "Tasks."

SECTION 3. IMPLEMENTATION SUMMARY

3.1 Tasks.

The following tasks must be accomplished for implementation of the prototype system. A brief description of the task, the staff element responsible for the task, and the location of the detailed task plan is given. Detailed task plans are contained in the appendices to this document. Task descriptions may be modified upon recommendation from the staff element responsible.

TASK: Computer Site Selection.

Staff Element: COMP-1. The location of the computer within the designated computer room must be established. In selecting a location, consideration must be given to availability of electrical power and access to telephone lines for DROLS installation. Consideration must also be given to safeguarding the computer once installed. Safeguarding includes limitations and control over physical access to the equipment and surrounding area for TEMPEST control (See Appendix A).

TASK: Utilities and Environmental Control.

Staff Element: LEEE. Installation of the computer for the prototype system will require modifications to the utilities available within the computer room. As a minimum, electrical power must be provided in the vicinity of the computer. For planning purposes, assume power requirements of 210-230 volts and 30 amperes (See Appendix B).

TASK: Structural Alterations and Modifications.

Staff Element: LEEE. Modifications to the current computer room may be required prior to installation. Describe required modifications, if any, and develop a plan for making the modifications (See Appendix C).

TASK: Access Controls and Physical Security.

Staff Element: OAIS and STTI. The prototype system will contain citations classified up to SECRET. In addition, the operation of the technical library will depend on the functioning of the computer running the prototype system. Physical access to the computer must be limited to those

staff members responsible for system operation and maintenance. Similarly, access to video display terminals and the telecommunications network with access to the system must be controlled and limited to authorized library staff members. The STTI Security Standard Operating Procedures must be modified to reflect additional access safeguards and security procedures for the prototype system.

Because the computer, local network, terminals, and printers will process classified data, emanations from these devices must also be shielded from unauthorized detection. Shielding for the network, terminals, and printers can be achieved through use of devices specifically manufactured for processing classified information (i.e., TEMPEST certified components). Shielding of the computer and disk drives can be accomplished with electrical or physical barriers which either mask emanations or restrict access to areas where emanations can be detected. (See Appendix D.)

TASK: Local Network Installation.

Staff Element: LECD. The computer running the prototype system will be located in the Headquarters, DNA Main Computer Facility. The system must be accessible from terminals located in the technical library and in the Office of the Director, Technical Information. A local network must be installed to support access to the system. The network must handle classified information and support a minimum communications rate of 4800 baud. Two terminals and a printer will be located in the Office of the Director, Technical Information. Five terminals with printers will be located in the technical library (See Appendix E).

TASK: DROLS Line Relocation.

Staff Element: LECD. At present, the dedicated, classified telephone line for DROLS access terminates in the technical library, with encryption gear located in the communications center. The terminus of this line must be moved from the technical library to the computer room and installed adjacent to the computer running the prototype system. The DROLS line will be connected to the computer to permit automated access to the DTIC TR data base. Connection of the relocated DROLS line must be done concurrent with or shortly after system accreditation. Movement of the DROLS line must be coordinated with STTI because the unavailability of the line during relocation affects library operations (See Appendix F).

TASK: Hardware Installation and Testing.

Staff Element: COMP-1. Hardware requirements for the prototype system are listed in Section 2.3, "Summary of Requirements." The following equipment will be installed within the computer room: central processor, disk drives, operator console/terminal, high-speed line printer, and communications controller (and multiplexer, if required) for the local network. The encryption gear and modem for the DROLS telephone line will remain in the communications center. Prior to software installation and testing, prototype system hardware must be tested and debugged (See Appendix G).

TASK: Software Installation and Testing.

Staff Element: COMP-1. Installation of the prototype system software will be performed by a team from LLNL and the commercial package vendor. DNA staff members assigned as system operators, if selected, should also participate in the installation. Software testing under this task will focus on operability and functionality of the commercial software package and the associated gateway software (See Appendix H).

TASK: Risk Analysis and System Accreditation.

Staff Element: COMP-1. Risk analysis covers practically every facet of system implementation from suitability of the computer site to plans for data backup and recovery. The aim is to identify hazards (risks) to system operation and select methods for reducing or eliminating the risk. Several publications provide guidelines for conducting risk analysis:

- **Guidelines for Automatic Data Processing Physical Security and Risk Management**, Federal Information Processing Standards Publication 31, National Bureau of Standards, June 1974
- **Guideline for Automatic Data Processing Risk Analysis**, Federal Information Processing Standards Publication 65, National Bureau of Standards, 1 August 1979
- **Guideline for Computer Security Certification and Accreditation**, Federal Information Processing Standards Publication 102, National Bureau of Standards, 27 September 1983.

In addition, there have been other computer site risk analyses conducted at DNA. These can be used to cover the LAM prototype system to the extent that there are similarities in the systems (e.g., located in the same computer room).

As a result of risk analysis, corrective actions are initiated, as required, and plans developed to operate the prototype as a protected system. Completion of the risk analysis and corresponding followup actions leads to system accreditation for processing and storing classified data (See Appendix I).

TASK: File Conversion.

Staff Element: STTI and COMP-1. In conjunction with software installation and testing, the existing ATLAS file must be converted to a format compatible with the prototype system catalog. The bibliographic data contained in the ATLAS file will form the core of the new on-line catalog maintained with the prototype system. This core file will be augmented with information contained in hard copy files (e.g., classified subject terms and descriptors). In addition, other files used by STTI for patron identification, tracking contractor deliverables, technical report review, and document printing and distribution must be converted to the prototype system (See Appendix J).

TASK: Training.

Staff Element: STTI and COMP-1. Technical library staff members must be trained to use the prototype system. Training will cover system functions and procedures for retrieval, cataloging, and circulation management and control. A system operator must be trained to perform file backup and recovery, daily startup and shutdown procedures, and other recurring file maintenance tasks (See Appendix K).

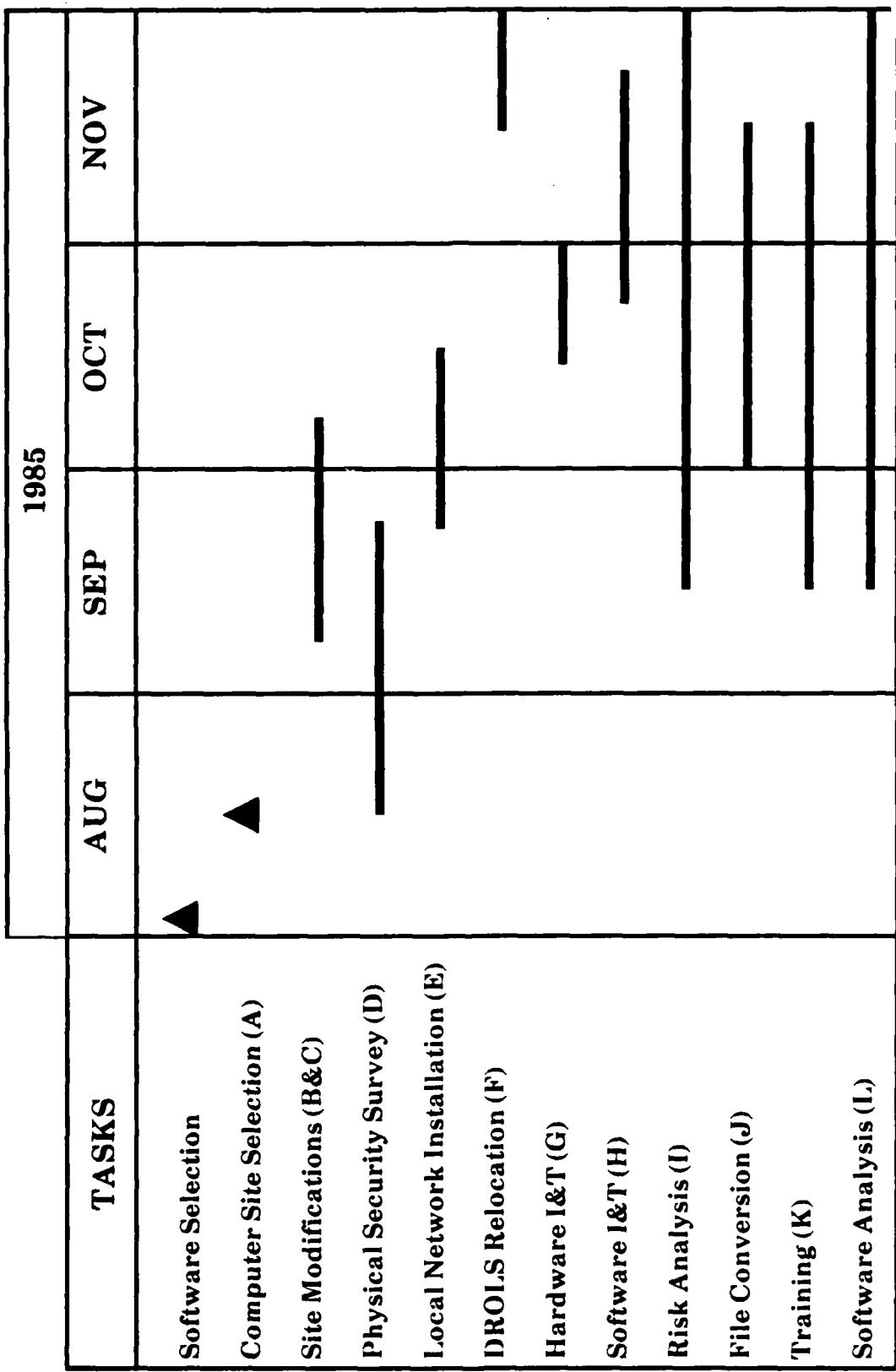
TASK: Software Analysis.

Staff Element: COMP-1. In conjunction with the system risk analysis, tests must be conducted on the access controls and security safeguards provided by the system software. System features such as password protection, data and program access authority, transaction logging, and audit trailing must be exercised and evaluated. The STTI Security Standard Operating Procedures must be modified to reflect additional operating safeguards and security procedures for protecting the prototype system software and data. COMP-1, working in conjunction with the STTI System Administrator, must develop security auditing measures effective for safeguarding data and programs on the prototype system computer (See Appendix L).

3.2 Schedule.

Figure 3-1 shows the order of precedence for accomplishing system implementation tasks and the corresponding schedule.

FIGURE 3-1. IMPLEMENTATION SCHEDULE



APPENDIX A

TASK: COMPUTER SITE SELECTION

STAFF ELEMENT: COMP-1

Task Summary. The location of the computer within the designated computer room must be established. In selecting a location, consideration must be given to availability of electrical power and access to telephone lines for the Defense Research, Development, Test, and Evaluation (RDT&E) On-Line System (DROLS) installation. Consideration must also be given to safeguarding the computer once installed. Safeguarding includes limitations and control over physical access to the equipment and surrounding area for TEMPEST control.

Completed Actions. The computer, disk drives, operator's console, local network communications controller, and line printer will be located within the Headquarters, Defense Nuclear Agency (DNA) Main Computer Facility.

Pending Actions. Develop a floor plan for positioning the computer and accompanying equipment within the Main Computer Facility. For planning purposes, the following equipment, manufactured by the Digital Equipment Corporation (DEC), will be located in the facility:

- VAX 11/750 central processing unit (750XA-BE)
- Winchester disk subsystem (RUA81-CA), 456 Megabytes, cabinet-mounted, with controller
- Rack-mounted removable disk drive (RA60-AA), 205 Megabytes
- Communications controller (DMF32-LP)
- Medium-speed line printer (LP32-EB), 445 lines per minute, 96 character set.

A copy of the completed floor plan will be provided to LEEE for use in planning electrical utility and structural modifications.

APPENDIX B

TASK: UTILITIES AND ENVIRONMENTAL CONTROL

STAFF ELEMENT: LEEE

Task Summary. Installation of the computer for the prototype system will require modifications to the utilities available within the computer room. As a minimum, electrical power must be provided in the vicinity of the computer.

Completed Actions. None.

Pending Actions. Upon receipt of a floor plan and equipment power requirements from COMP-1, initiate and monitor a request to the General Services Administration (GSA) to make required modifications to the electrical system. Allow 6 weeks from the time the request is made to GSA to complete the required modifications. On the basis of using the DEC VAX 11/750 processor for the prototype, no environmental control modifications are anticipated.

APPENDIX C

TASK: STRUCTURAL ALTERATIONS AND MODIFICATIONS

STAFF ELEMENT: LEEE

Task Summary. Modifications to the current computer room may be required prior to installation. Describe required modifications, if any, and develop a plan for making the modifications.

Completed Actions. None.

Pending Actions. Upon receipt of a floor plan from COMP-1, assess the need for structural alterations. (On the basis of using the Digital Equipment Corporation (DEC) VAX 11/750 processor for the prototype system, no structural alterations or modifications are anticipated.)

APPENDIX D

TASK: ACCESS CONTROLS AND PHYSICAL SECURITY

STAFF ELEMENT: OAIS

Task Summary. The prototype system will contain citations classified up to SECRET. In addition, the operation of the technical library will depend on the functioning of the computer running the prototype system. Physical access to the computer must be limited to those staff members responsible for system operation and maintenance. Similarly, access to video display terminals and the telecommunications network with access to the system must be controlled and limited to authorized library staff members. The STTI Security Standard Operating Procedures must be modified to reflect additional access safeguards and security procedures for the prototype system.

Because the computer, local network, terminals, and printers will process classified data, emanations from these devices must also be shielded from unauthorized detection. Shielding for the network, terminals, and printers can be achieved through use of devices specifically manufactured for processing classified information (i.e., TEMPEST certified components). Shielding of the computer and disk drives can be accomplished with electrical or physical barriers which either mask emanations or restrict access to areas where emanations can be detected.

Completed Actions. A physical security assessment has been conducted for the Main Computer Facility in conjunction with a previous site accreditation. The prototype system will be located within this facility.

Pending Actions. Assess the physical security of the proposed computer installation and accompanying terminal network. Recommend modifications to facilities and operating procedures to ensure the physical security of the equipment and data. Assist COMP-1 and STTI in accomplishing the recommended modifications.

APPENDIX E

TASK: LOCAL NETWORK INSTALLATION

STAFF ELEMENT: LECD

Task Summary. The computer running the prototype system will be located in the Headquarters, DNA Main Computer Facility. The system must be accessible from terminals located in the technical library and in the Office of the Director, Technical Information. A local network must be installed to support access to the system. The network must handle classified information and support a minimum communications rate of 4800 baud. Two terminals and a printer will be located in the Office of the Director, Technical Information. Five terminals with printers will be located in the technical library.

Completed Actions. A request for planning and engineering services has been prepared and submitted. A site visit has been conducted for the purpose of preparing the network installation plan. Network components and installation supplies have been ordered and some have arrived at DNA.

Pending Actions. The network plan must be reviewed and approved by LECD. It is anticipated that the plan will be submitted to DNA by the end of July 1985. After review of the plan and receipt of required supplies, schedule installation of the network. Develop a time estimate for installing the network once the installation request is made.

APPENDIX F

TASK: DROLS LINE RELOCATION

STAFF ELEMENT: LECD

Task Summary. At present, the dedicated, classified telephone line for DROLS access terminates in the technical library, with encryption gear located in the communications center. The terminus of this line must be moved from the technical library to the computer room and installed adjacent to the computer running the prototype system. The DROLS line will be connected to the computer to permit automated access to the Defense Technical Information Center (DTIC) Technical Reports (TR) data base. Connection of the relocated DROLS line must be done concurrent with or shortly after system accreditation. Movement of the DROLS line must be coordinated with STTI because the unavailability of the line during relocation affects library operations.

Completed Actions. None.

Pending Actions. Coordinate relocation of the DROLS line with Mrs. Sandra Young, STTI. Submit a request to have the telephone line relocated. Allow approximately 1 month to complete the relocation. Plan to have the relocation completed after system accreditation, because the relocated line cannot be connected to the computer until approval to process classified data on the prototype system has been granted.

APPENDIX G

TASK: HARDWARE AND INSTALLATION AND TESTING

STAFF ELEMENT: COMP-1

Task Summary. Hardware requirements for the prototype system are listed in Section 2.3, "Summary of Requirements." The following equipment will be installed within the computer room: central processor, disk drives, operator console/terminal, high-speed line printer, and communications controller (and multiplexer, if required) for the local network. See Appendix A for a description of the equipment planned for installation in the Main Computer Facility. The encryption gear and modem for the DROLS telephone line will remain in the communications center. Prior to software installation and testing, prototype system hardware must be tested and debugged.

Completed Actions. None.

Pending Actions. Coordinate delivery of system hardware with the supplier selected by Lawrence Livermore National Laboratory (LLNL). The supplier will be responsible to COMP-1 for delivering, installing, and debugging system hardware.

APPENDIX H

TASK: SOFTWARE INSTALLATION AND TESTING

STAFF ELEMENT: COMP-1

Task Summary. Installation of the prototype system software will be performed by a team from LLNL and the commercial package vendor. DNA staff members assigned as system operators, if selected, should also participate in the installation. Software testing under this task will focus on operability and functionality of the commercial software package and the associated gateway software.

Completed Actions. None.

Pending Actions. Benchmarking of software packages will continue through the end of July 1985. Once benchmarking is completed, a package will be selected for the prototype. After the selection is made, COMP-1 will coordinate with the vendor to arrange installation of the package. The software vendor will be responsible to COMP-1 for installing, testing, and debugging the package provided. Software analysis (see Appendix L) may be conducted in conjunction with the later stages of software installation and debugging.

APPENDIX I

TASK: RISK ANALYSIS AND SYSTEM ACCREDITATION

STAFF ELEMENT: COMP-1

Task Summary. Risk analysis covers practically every facet of system implementation from suitability of the computer site to plans for data backup and recovery. The aim is to identify hazards (risks) to system operation and select methods for reducing or eliminating the risk. Several publications provide guidelines for conducting risk analysis:

- Guidelines for Automatic Data Processing Physical Security and Risk Management, Federal Information Processing Standards Publication 31, National Bureau of Standards, June 1974
- Guideline for Automatic Data Processing Risk Analysis, Federal Information Processing Standards Publication 65, National Bureau of Standards, 1 August 1979
- Guideline for Computer Security Certification and Accreditation, Federal Information Processing Standards Publication 102, National Bureau of Standards, 27 September 1983.

In addition, there have been other computer site risk analyses conducted at DNA. These can be used to cover the Local Automation Model (LAM) prototype system to the extent that there are similarities in the systems (e.g., located in the same computer room).

As a result of risk analysis, corrective actions are initiated, as required, and plans developed to operate the prototype as a protected system. Completion of the risk analysis and corresponding followup actions leads to system accreditation for processing and storing classified data.

Completed Actions. A risk analysis has been completed and accreditation received for processing classified data within the Headquarters, DNA Main Computer Facility.

Pending Actions. Conduct a risk analysis for the LAM prototype system to augment the assessment already completed for the Main Computer Facility. Initiate any corrective actions required to obtain accreditation for the LAM prototype system. Develop and document file backup and recovery procedures. Obtain approval for processing and storing classified data on the prototype system.

APPENDIX J
TASK: FILE CONVERSION
STAFF ELEMENT: STTI AND COMP-1

Task Summary. In conjunction with software installation and testing, the existing Automated Technical Library Accession System (ATLAS) file must be converted to a format compatible with the prototype system catalog. The bibliographic data contained in the ATLAS file will form the core of the new on-line catalog maintained with the prototype system. This core file will be augmented with information contained in hard copy files (e.g., classified subject terms and descriptors). In addition, other files used by STTI for tracking contractor deliverables, technical report review, and document printing and distribution must be considered for conversion to the prototype system.

Completed Actions. Files considered for conversion to the LAM system have been identified.

Pending Actions. The vendor providing the prototype system software will provide services to perform the file conversions. COMP-1 will provide technical assistance and supervision for the conversion of files presently maintained by COMP-1. STTI will plan for augmenting the ATLAS file with data contained on cards. This involves keyboarding the data contained on the cards (primarily classified subject terms and descriptors) into the prototype system. In some instances, data contained on the DTIC TR data base can be downloaded and added to the prototype system catalog (e.g., abstracts for reports held at both DTIC and DNA).

APPENDIX L

TASK: SOFTWARE ANALYSIS

STAFF ELEMENT: COMP-1

Task Summary. In conjunction with the system risk analysis, tests must be conducted on the access controls and security safeguards provided by the system software. System features such as password protection, data and program access authority, transaction logging, and audit trailing must be exercised and evaluated. The STTI Security Standard Operating Procedures must be modified to reflect additional operating safeguards and security procedures for protecting the prototype system software and data. COMP-1, working in conjunction with the STTI System Administrator, must develop security auditing measures effective for safeguarding data and programs on the prototype system computer.

Completed Actions. None.

Pending Actions. After selection of the prototype system software, review documented access and software controls provided by the package. Prepare a plan for testing and assessing these features. After or in conjunction with software installation and testing (see Appendix H), conduct tests of the software and data access controls. Develop procedures for maintaining and reviewing a system transaction audit trail. Establish and document procedures and practices for establishing and changing user passwords and file and data access controls.

The following are the names of the packages being evaluated along with the name of the company providing the package and the corresponding computer operating system:

- BIBLIOTECH - Comstow Information Service, Digital Equipment Corporation (DEC) VMS
- BRS/SEARCH - Bibliographic Retrieval Service, DEC VMS or UNIX (Bell Labs or Berkeley versions)
- DATALIB - M/A-COM Sigma Data, Incorporated, DEC VMS or Data General AOS
- LS/2000 - OCLC, Incorporated, MUMPS/MIIS

- MINISIS - Systemhouse, Incorporated, Hewlitt-Packard AOS.

APPENDIX K

TASK: TRAINING

STAFF ELEMENT: STTI

Task Summary. Technical library staff members must be trained to use the prototype system. Training will cover system functions and procedures for retrieval, cataloging, and circulation management and control. A system operator must be trained to perform file backup and recovery, daily startup and shutdown procedures, and other recurring file maintenance tasks.

Completed Actions. None.

Pending Actions. After selection of the prototype system software, coordinate training with the vendor providing the package. Normally, training is considered part of software installation and is provided by the vendor. Designate a system operator and backup operator(s). The system operator will be provided by and work under the supervision of COMP-1.

E W D

F I L M E D

6-86

DTIC